CERTIFICATE OF TRANSMISSION

I hereby certify that this document is being transmitted electronically to the United States Patent and Trademark Office via the EFS Web e-Filing system on 9-9-, 2010.

Linda L. Guice

Name: Linda L. Guice

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Applicant: Glover, John N.	)	
	)	
Filed: May 27, 1999	)	Art Unit: 1723
	)	
Application No.: 09/320,950	)	Primary Examiner: David Sorkin
	)	
For: Filtering Medium and Method for Contacting Solids Containing Feeds for Chemical Reactors	)	Attorney Docket No: 105218.04 (formerly 020781.04)

APPEAL BRIEF
(under 37 C.F.R. §41.37)

This is an appeal from the final rejection of Claims 59, 61 – 67, and 69 – 95 in the above referenced patent application. The Final Office Action was dated August 10, 2009.

I. REAL PARTIES IN INTEREST

The inventor, John N. Glover, and the assignee, Crystaphase International, Inc., are the only real parties in interest with respect to the captioned patent application.

II. RELATED APPEALS AND INTERFERENCES

This is the third appeal filed by Appellant in the present case. The first Notice of Appeal was filed on November 10, 2005. Prosecution was reopened by the Primary Examiner in the Office Action dated December 8, 2006. The second Notice of Appeal was filed on February 26, 2008. Appellant filed a Request for Continued Examination on September 26, 2008. The third Notice of Appeal was filed on February 10, 2010.

III. STATUS OF CLAIMS

A. Status of the Claims

1. Claims cancelled: 1-58, 60 and 68.
2. Claims withdrawn (but not cancelled): None.
3. Claims pending: 59, 61-67 and 69-95.
4. Claims allowed: None.
5. Claims rejected: 59, 61-67 and 69-95.

B. Claims on Appeal

Claims 59, 61-67 and 69-95 are presently on appeal.

IV. STATUS OF AMENDMENTS

Claims 59, 61-67 and 69-95 were finally rejected in the Final Office Action dated August 10, 2009. Claims 82-88 were rejected under 35 U.S.C. §112, first paragraph, for

failing to comply with the written description requirement. Claims 59, 61-67, 69-85, 94 and 95 were rejected under 35 U.S.C. §103(a) for obviousness over Kramer (US 4,615,796)(Ex. A) (hereinafter "Kramer") in view of "CE Refresher: Catalyst Engineering, Part 2" by John Fulton (hereinafter "Fulton")(Ex. B). Claims 59, 61-67, 69-85, 94 and 95 were rejected under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton, and further in view of Hung et al. (DE 3,539,195) (hereinafter "Hung")(Ex. C). Claims 59, 61-67, 69-85, 94 and 95 were rejected under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton, and further in view of allegedly admitted prior art of Appellant's Declaration filed 28 February 2008 which relates to BT-750 (Ex. D). Claims 86-93 were rejected under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton. Claims 86-93 were rejected under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton, and further in view of allegedly admitted prior art of Appellant's Declaration filed 28 February 2008 which relates to BT-750.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claims 59, 67, 78, 86-89 and 94 are independent claims. Claims 61-66, 79 and 82-83 are ultimately dependent upon Claim 59. Claims 69-77, 80 and 84-85 are ultimately dependent upon Claim 67. Claim 81 is dependent upon Claim 78. Claims 90-93 are ultimately dependent upon Claim 89. Claim 95 is dependent upon Claim 94. A summary of the subject matter of the most relevant independent and dependent claims currently on appeal with key features underlined is presented as follows:

Claim 59

The first independent claim, Claim 59, features a method of fluid distribution in a

chemical reactor 22 comprising the steps of:

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body having a substantially annular outer peripheral shape (FIGS 4-5), a central opening 108 extending through the body, and at least three elliptical openings 89 extending through the body and positioned between the central opening 108 and an outer periphery of the body so that a combination of the central opening 108 and the at least three elliptical openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through the at least some of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through the plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 67

The second independent claim, Claim 67, features a method of fluid distribution in a chemical reactor 22 comprising the steps of

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body having a substantially polygonal outer peripheral shape (FIGS 4-5), a central opening 108 extending

through the body, and at least three elliptical openings 89 extending through the body and positioned between the central opening 108 and an outer periphery of the body so that a combination of the central opening 108 and the at least three elliptical openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through the at least some of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through at least some of the plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 78

The third independent claim, claim 78, features a method of fluid distribution in a chemical reactor comprising the steps of:

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body, a central opening 108 extending through the body, and at least three elliptical openings 89 also extending through the body and positioned between the central opening 108 and an outer periphery of the body so that a combination of the central opening 108 and the at least three elliptical openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through each of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through the at least some of the plurality of fluid flow passageways 87, 88, 89, 108 prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 79

Dependent claim 79 features the method of claim 59, wherein the central opening is circular and the elliptical openings are non-circular.

Claim 80

Dependent claim 80 features the method of claim 67, wherein the central opening is circular and the elliptical openings are non-circular.

Claim 81

Dependent claim 81 features the method of claim 78, wherein the central opening is circular and the elliptical openings are non-circular.

Claim 82

Dependent claim 82 features the method of claim 64, wherein the fluted outer peripheral surface of the at least one of the plurality of ceramic filter units has sharp corners.

Claim 83

Dependent claim 83 features the method of claim 65, wherein at least one of the recessed

notches of the outer periphery has sharp corners.

Claim 84

Dependent claim 84 features the method of claim 70, wherein at least one of the notches recessed from the outer periphery has sharp corners.

Claim 85

Dependent claim 85 features the method of claim 76, wherein at least one of the recessed notches on the outer periphery has sharp corners.

Claim 86

The fourth independent claim, Claim 86, features a method of fluid distribution in a chemical reactor 22 comprising the steps of:

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body having a substantially annular outer peripheral shape (FIGS 4-5), a central opening 108 extending through the body, and at least three trisoid-shaped openings 89 extending through the body and positioned between the central opening 108 and an outer periphery of the body so that a combination of the central opening 108 and the at least three trisoid-shaped openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through the at least some of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through the plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 87

The fifth independent claim, Claim 87, features a method of fluid distribution in a chemical reactor 22 comprising the steps of

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body having a substantially polygonal outer peripheral shape (FIGS 4-5), a central opening 108 extending through the body, and at least three trisoid-shaped openings 89 extending through the body and positioned between the central opening 108 and an outer periphery of the body so that a combination of the central opening 108 and the at least three trisoid-shaped openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through the at least some of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through at least some of the plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 88

The sixth independent claim, claim 88, features a method of fluid distribution in a chemical reactor comprising the steps of:

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body, a central opening 108 extending through the body, and at least three trisoid-shaped openings 89 also extending through the body and positioned between the central opening 108 and an outer periphery of the body so that a combination of the central opening 108 and the at least three trisoid-shaped openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through each of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through the at least some of the plurality of fluid flow passageways 87, 88, 89, 108 prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 89

The seventh independent claim, claim 89, features a method of fluid distribution in a chemical reactor comprising the steps of:

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body and at least three

trisoid-shaped openings 89 extending through the body and positioned between a medial portion of the unit and an outer periphery of the body so that the at least three trisoid-shaped openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through each of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through the at least some of the plurality of fluid flow passageways 87, 88, 89, 108 prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 94

The eighth independent claim, claim 94, features a method of fluid distribution in a chemical reactor comprising the steps of:

(A.) providing a layer 66, 68, 70 (FIG. 2) of a plurality of ceramic filter units 15 (FIGS. 4-16), at least some of the ceramic filter units 15 including a body having a circular outer peripheral shape and at least three elliptical openings 89 extending through the body and positioned between a medial portion of the unit and an outer periphery of the unit so that the at least three elliptical openings 89 define a plurality of fluid flow passageways 87, 88, 89, 108 (FIGS. 4, 5, 14) extending through each of the plurality of ceramic filter units 15;

(B.) contacting an organic-based feed stream 51 (FIG. 2) with the layer 66, 68, 70 of

the plurality of ceramic filter units 15; and

(C.) subdividing the organic-based feed stream 51 into a plurality of smaller fluid streams by passing the organic-based feed stream 51 through the at least some of the plurality of fluid flow passageways 87, 88, 89, 108 prior to the organic-based feed stream 51 contacting a catalyst bed in the chemical reactor 22.

Claim 95

Dependent claim 95 features the method of claim 94, wherein body includes six elliptical openings.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether Claims 82-85 and 86-88 are unpatentable under 35 U.S.C. §112, first paragraph, for failing to comply with the written description requirement.

2. Whether Claims 59, 61-67, 69-85, 94 and 95 are unpatentable under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton.

3. Whether Claims 59, 61-67, 69-85, 94 and 95 are unpatentable under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton, and further in view of Hung.

4. Whether Claims 86-93 are unpatentable under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton.

5. Whether Claims 59, 61-67 and 69-95 are unpatentable under 35 U.S.C. §103(a) for obviousness over Kramer in view of Fulton, and further in view of the allegedly admitted prior art of Appellant's Declaration filed 28 February 2008 which relates to BT-750.

VII. ARGUMENT

1. Rejection of Claims 82-85 and 86-88 under 35 U.S.C. 112 is Improper.

The Primary Examiner has rejected Claims 82-85 and 86-88 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Claims 82-85

As to Claims 82-85, the Primary Examiner alleges that the originally filed application makes no distinction between "sharp" corners and other corners, and that there is no description in the originally filed application of corners being "sharp." (Ex. E, Final Office Action, p. 2, section 3).

Appellant's aforementioned claims are directed to units having "sharp" corners. A common feature of the polygonal shaped units and units with fluted surfaces or recessed notches of Appellant's invention is that they each have sharp corners where the sides of the units meet on the outer peripheries of the unit surface. (See, *e.g.*, Ex. F, FIGS. 5, 6, 7, 8, 9, 10, 11 and 13).

Appellant admits that the word "sharp" is not used in its specification. Appellant respectfully submits, however, that §112 does not require that the text of the specification include a written discussion of the claimed subject matter. For example, under proper circumstances, the drawings alone may provide a written description of an invention under § 112. Drawings can constitute an adequate description if they describe what is claimed and convey to those of skill in the art that the patentee actually invented what is claimed. *See Cooper Cameron v. Kvaerner Oilfield,* 291 F. 3d 1317, 1323 (Fed. Cir. 2002)(Ex. G).

FIGS. 5, 6, 7, 8, 9, 10, 11 and 13 of the drawings in Appellant's originally filed disclosure all show embodiments of the filter unit having three or more edges that meet to form a sharp corner on the outer periphery of the unit. In connection therewith, paragraph [0012] of Appellant's published application teaches that the units may have "substantially any polygonal configuration, such as triangles, quadrilaterals and pentagons." Thus, to put it another way, the triangular, quadrilateral, pentagonal, and other similarly shaped figures shown in the aforementioned drawings all, by definition, have multiple sharp corners formed on their outer peripheries.

To the extent that the application text does not specifically use the word "sharp," it is clear from the drawings that the aforementioned corners fall within the generally understood-in-the-art definition of the term "sharp," in that edges meet to form a point that protrudes from the center region of the unit. The sharp corners on the units in the drawings are particularly distinguishable when compared with the units shown in FIGS. 4 and 12 on the same page, which have curved exterior peripheries and no pointed, protruding "sharp" corners.

Appellant respectfully submits that this concept of "sharp corners" is well recognized and understood in the art. In fact, Fulton and Hung, which are the same prior art references cited and relied upon by the Primary Examiner in the present §103 rejections use the exact terminology "sharp corners" to describe filter units with similarly shaped peripheries as those of Appellant. (See, *e.g.*, Ex. B, Fulton, page 97, ¶3; Ex. C, Hung, page 10, lines 14-15). To the extent that the corners described in Fulton and Hung are recognized as "sharp," the corners on Appellant's units should also be recognized as "sharp."

Claims 86-88

As to Claims 86-88, the Primary Examiner alleges that the combination of "a central opening extending through the body, and at least three trisoid-shaped openings extending through the body and positioned between the central opening and an outer periphery of the body" was not described in the originally filed application.

Appellant respectfully disagrees, and as an example points to the following two paragraphs from the specification that, when taken together, support the aforementioned language:

(i) "As to the ceramic filter units 15 of FIGS. 4 and 5, although four openings 88 disposed about a circular shaped opening 108 are shown, it will be apparent to one of ordinary skill in the art that a greater, or smaller, number of openings 88 may be provided. For example, three openings 88 or five openings 88, could be utilized." (See Ex. F, ¶[0059]).

(ii) "FIGS. 4 and 5 illustrate a specific embodiment of the present invention as a ceramic filter unit 15 having a circular shape, or cross-sectional configuration, 86 and at least some elliptical shaped openings 88 (FIGS. 4-5). Trisoidal shaped openings 87 may also be used (FIG. 14). Optionally, the ceramic filter units 15 may have other shaped openings 108 mixed with the elliptical shaped openings 88 (FIGS. 4-5) or the trisoidal shaped openings 87 (FIG. 14)." (See Ex. F, ¶[0059]).

2. Rejection of Claims 59, 61-67, 69-85, 94 and 95 Under 35 U.S.C. § 103(a) Over Kramer In View Of Fulton is Improper.

Appellant respectfully submits that Claims 59, 61-67, 69-85, 94 and 95, which include independent Claims 59, 67, 78 and 94, are not obvious over Kramer in view of Fulton.

a. Combination of cited art does not teach or suggest all of the claim limitations

For example, Kramer in combination with Fulton does not teach or suggest all of the claim limitations of Claims 59, 67, 78 and 94.

Claims 59, 67, 78 and 94 each relate to a method of "fluid distribution." Appellant respectfully submits that neither Fulton nor Kramer discloses or suggests the element of fluid distribution. Kramer's teachings are directed to a method of filtering solids. Fluid distribution is not the same as, equivalent to, or inherent in filtering. Fluid distribution involves resubdividing, a plurality of times, an incoming fluid stream into multiple smaller fluid streams so that the incoming stream is distributed, *i.e.* , spread across, the fluid entry cross section of a reactor bed in a uniform manner. (see Ex. F, ¶[0055]). This uniform fluid distribution occurs in addition to, and not because of, any filtration that may also be occurring.

Neither Kramer nor Fulton teaches, discloses, mentions, uses the words, suggests or alludes to "fluid distribution," nor is the claimed fluid distribution feature inherent in these references. Kramer only teaches that the particles can be used for traditional filtration purposes, *i.e.*, removing suspended solids of greater than 10 microns in diameter, preferably iron sulfide, from mixed phase gas-liquid-solid streams (see Ex. A, Kramer, col. 3, lines 8 – 15). Kramer is tailored to correcting a specific problem in the petroleum processing industry, namely filtration-based removal of solid materials. The solids filtration process of Kramer would not necessarily result in fluid distribution, and in particular would not produce uniform fluid distribution that is spread across the cross section of the bed as achieved by Appellant's presently claimed invention.

Claims 59, 67, 78 and 94 each also describe and claim the feature of subdividing an

organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through one or more of a plurality of fluid flow passageways. An embodiment of Appellant's invention involves the use of ceramic filter units with openings, wherein the particular fluid in the reactor not only passes around the ceramic filter units, but also through at least some of the units via the plurality of fluid flow passageways created by the openings in the units. In particular, the passageways comprise three or more passages surrounding a central passage.

Appellant respectfully submits that this feature is not disclosed or suggested in Kramer or Fulton. Kramer sets forth that alternative shaped guard bed particles can be used. (See Ex. A, Kramer, col. 4, lines 1-4). However, every example in Kramer utilizes a sphere or a cylinder, with the sphere being the particle shape of choice. There is no teaching or suggestion that ceramic filter units with openings, and specifically with three or more passages surrounding a central passage, could be utilized, or that such a configuration would be beneficial. Without this specific arrangements of openings claimed in the present invention, the particles disclosed in Kramer would not provide the subdivided flow required to uniformly distribute the organic-based feed stream across a catalyst bed to prevent channeling and other deleterious consequences.

Claims 59, 67, 78 and 94 each also describe and claim the use of elliptical openings. Appellant respectfully submits that neither Kramer nor Fulton teaches the use of elliptical openings, or recognizes the advantages that this shape of opening provides. Also, the spaces around and between the particles in Kramer would eventually become plugged with solids, while the elliptical openings in the ceramic units of the present invention would

continue to allow fluid flow through the ceramic units, which results in uniform fluid distribution throughout the packed bed. The Primary Examiner contends that Fulton teaches circular/elliptical openings, in that the "broadest reasonable definition of ellipse includes circles" (Ex. E, Final Office Action, p. 3, lines 10-11); however, Appellant is not claiming "circular openings." In fact, Appellant is specifically claiming a unit in which "the elliptical openings are non-circular," (See Claims 79-81) which excludes circular ellipses from the claim scope.

Further, there is evidence throughout the prosecution history to indicate that Appellant distinguishes between elliptical-shaped and circular-shaped openings. For example, Appellant noted on page 12 in its Office Action Response dated February 17, 2005, that utilizing ellipses instead of circles as the shapes of the openings in the ceramic units allows for an additional design parameter for alteration of the size of the minor and major axes to allow for better control of the lateral fluid distribution emitted from the opening. (See Ex. H, page 12). Appellant's test results submitted to the Primary Examiner with the Declaration of the inventor John Glover during prosecution support these findings. (See Ex. I). Also, the drawings in the application (see Ex. F, FIGS. 4 - 13) show a clear and noticeable difference in the dimensions of the circular openings and elliptical openings in the ceramic units. The dimensional differences between circular and elliptical openings are also clearly visible in the physical samples of ceramic units that were submitted to the Primary Examiner by Appellant during prosecution of this application. Further, language in the specification (see Ex. F, ¶[0012]) expressly sets forth that the dimensional measurements for a cross-sectional configuration of a circle, and major and minor axis configurations of an ellipse, are different and distinguishable.

Furthermore, Appellant's elliptical shaped openings provide improved and unexpected fluid distribution properties when compared to circular openings (see Section d. below), which indicates that elliptical openings and circular openings are indeed distinguishable from each other, both in shape and results achieved.

b. No suggestion or motivation to combine references

Appellant respectfully submits that there is no suggestion or motivation, either in the cited references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings, *assuming arguendo* that the references do contain the specific teachings of Appellant's claim limitations directed to fluid distribution and elliptical openings.

One of ordinary skill in the art would not be motivated to combine the teachings of Kramer and Fulton to create Appellant's claimed invention. The Primary Examiner has attempted to piece together Appellant's claimed invention from Kramer and Fulton using a hindsight reconstruction of the prior art, which is impermissible.

For example, Appellant claims a method of fluid distribution. The Primary Examiner does not specifically identify the motivation for one skilled in the art to modify the filtration units in Kramer by providing openings that achieve enhanced fluid distribution. Fluid distribution is an entirely different function from filtration. In fact, the words "fluid distribution" are never used, or even suggested, in Kramer or the other cited references.

Further, it is inapposite to rely on Kramer, a filtration patent, as a starting point to reach Appellant's fluid distribution claims. If one skilled in the art were seeking to improve filtration properties, he certainly would not add a plurality of openings to the guard bed particles taught by Kramer, because this would create additional flow space and diminish the

effectiveness of these particles in filtering solid materials. In other words, adding openings to the particles of Kramer would allow more, and not fewer, solids to pass through the particles, which would diminish an intended benefit of the Kramer reference.

Also, Appellant claims a central opening in the cylindrical unit, and a plurality of other openings surrounding the central opening. The Primary Examiner does not specifically identify the motivation for one skilled in the art to add these features to Kramer. Kramer does not teach these features at all, and merely sets forth the broad, open-ended statement that the "particles can be in other configurations." (Ex. A, Kramer, col. 4, lines 1 – 4). Fulton teaches a unit with openings therein, but only as an example of "the almost limitless varieties possible." (Ex. B, Fulton, p. 97). Reliance upon these types of broad, generalized statements from both Kramer and Fulton is not sufficient reason to motivate one skilled in the art to produce Appellant's specific claimed embodiments. Only improper hindsight reconstruction would lead one to believe otherwise.

Also, certain of Appellant's claims are directed to elliptical-shaped openings. The Primary Examiner does not specifically identify the motivation for one skilled in the art to take the step of making the plurality of surrounding openings elliptical in shape. In fact, the words "ellipse" or "elliptical" are never used, or even suggested, in either Kramer or Fulton. With regard to the allegation that circles and ellipses are the same, please see Appellant's arguments made previously in Section a. herein.

c. Teaches Away

Certain of Appellant's claims (e.g., claim 84) are directed to units having outer peripheries with sharp corners. Notably, two of the cited references teach away from using such sharp

corners, and indicate that "sharp corners" are thought to be disadvantageous. For example, Fulton indicates that catalytic materials with "sharp corners" would soon crumble in service and plug spaces between (and similarly within) the packed units. (See Ex. B, Fulton, page 97, ¶3). Also, Hung refers to using catalyzer shapes that are "free of sharp corners, be they convex or concave ...". (See Ex. C, Hung, page 10, lines 14-15). Thus, both Hung and Fulton would not be combined with Kramer by one of ordinary skill in the art with respect to Appellant's claimed embodiments.

d. Combination of prior art elements has new functionality

As noted previously, claims 59, 67 and 78 each relate to a method of "fluid distribution." Appellant respectfully submits that neither Fulton nor Kramer discloses or suggests this functionality of fluid distribution. Instead, they relate to filtering. Fluid distribution is not the same as, equivalent to, or inherent in filtering. The added functionality of fluid distribution according to the present invention occurs in addition to, and not because of, any filtration that may also be occurring.

e. Unpredictable results

Appellant's use of ceramic units with elliptical openings unpredictably provides advantageous results when compared to prior art materials. To support this assertion, Appellant submitted a declaration from the inventor John N. Glover in the Amendment and Response to Office Action filed November 5, 2003. (See Ex. I). This declaration sets forth the following pertinent information:

(a) Appellant performed experiments comparing the ceramic filter units of the present invention with prior art ceramic filter units that are structurally similar to guard bed

particles/catalyst pellets such as those found in Fulton and Kramer.

(b) Appellant's use of the ceramic units of the present invention unexpectedly resulted in advantageous fluid distribution properties, such as improved horizontal fluid distribution and significantly decreased pressure drop across a filter bed.

(c) The use of elliptical openings advantageously provided additional flow control parameters, *i.e.*, the ability to vary the major and minor axes of the elliptical openings, when designing the ceramic units.

(d) The Assignee of Appellant has enjoyed substantial commercial success from the sale of the ceramic units of the present invention, which should be considered indicative of the fact that the ceramic units have met a long felt, unfilled need in the relevant industry.

To the extent that Appellant's experiments did not include a test of a six-hole device that exactly matches the unit shown in the drawings of Fulton, Appellant respectfully submits that, as stated in its Office Action Response dated February 17, 2005, (see Ex. H, pages 10-11), testing of a six-hole device is impractical, if not impossible, as this embodiment is not, to Appellant's knowledge, commercially available on the market. Requiring Appellant to supply and test such a device would place an undue burden on Appellant. The 4-hole device which was tested by Appellant is believed to be the commercially available embodiment that is most similar to the Fulton device.

Perhaps the six hole device is not available because it would not be commercially successful due to its shape and configuration, which if true, would support Appellant's arguments relating to the commercial success and unpredictable results of products covered by its claimed embodiments.

3. Rejection of Claims 59, 61-67 , 69-85, 94 and 94 Under 35 U.S.C. § 103(a) Over Kramer In View Of Fulton, and Further in View of Hung is Improper.

Appellant respectfully submits that Claims 59, 61-67 and 69-85, which include independent Claims 59, 67, and 78, are not obvious over the combination of Kramer and Fulton in view of Hung.

The Primary Examiner points to Hung (dated May 2000) as evidence to establish "the art recognized equivalence of circular and elliptical openings in ceramic units." (See Ex. E, Final Office Action, page 7).

In this regard, Appellant notes that in the very first Office Action for this application dated April 26, 2000, on page four, paragraph 11, the Primary Examiner stated that "circles are not elliptical," and on that basis found Appellant's claim reciting "an elliptical cross section selected from the group consisting of ellipses and circles" to be indefinite. (See Exhibit J).

Thus, there are two factual statements made by the very same Primary Examiner (a person of skill in the art) during the prosecution of this application, *i.e.*, "the broadest reasonable definition of ellipse includes circles" and "circles are not elliptical," that appear to be directly conflicting with each other. Further, the Primary Examiner relies upon a May 2000 document (Hung) to teach the "art recognized equivalence" of circles and ellipses (See Ex. E, Final Office Action, page 7), while stating himself in April 2000, just one month prior to the date of Hung, that circles are not elliptical. This demonstrates that the alleged equivalence of circles and ellipses was not, in fact, "art recognized" by those of skill in the art during that relevant time period.

When Appellant raised this discrepancy with the Primary Examiner, the Primary Examiner responded by alleging that: (i) the language cited by Appellant was from an Office Action on an

application that was the predecessor to a divisional application and was subsequently expressly abandoned, and thus was not binding precedent; and (ii) Claim 5 of Appellant's original specification set forth that "elliptical shapes include circles." (See Exhibit K, Office Action dated December 8, 2006).

As to argument (i), Appellant respectfully submits that the two applications stem from the same parent application, have the exact same specification and deal generally with the same subject matter. Even if not "binding precedent" *per se*, the Primary Examiner's statement should be taken as strong evidence that there was not any art-recognized equivalence of circles and ellipses among those of skill in the art during the relevant time period. As to argument (ii), Appellant respectfully submits that it is well established law that narrow claim language found in a particular claim in an application should not be interpreted to limit or restrict the scope of the teachings of the application's specification containing additional broader embodiments.

4. Rejection of Claims 86-88 Under 35 U.S.C. § 103(a) Over Kramer In View Of Fulton is Improper.

Appellant respectfully submits that Claims 86-88 are not obvious over the combination of Kramer and Fulton.

Claims 86-88 are directed towards a trisoid-shaped opening in the ceramic unit. The Primary Examiner argues that the broadest reasonable definition of a trisoid includes circles. (See Ex. E, page 8).

For one, neither Kramer nor Fulton teaches, discloses, mentions, suggests or alludes to "trisoids" in any manner. Further, in the "Beyond the Ellipse" article relied upon by both the Appellant and the Primary Examiner to provide the definition of the term "trisoid," the author Ivars

Peterson states that "In the case of three points, her computer plots showed an oval figure that was obviously neither a circle (one fixed point) nor an ellipse (two fixed points). She called the result a trisoid." (See Ex. L, ¶5).

Thus, even the author of the reference that is relied upon to define the term "trisoid" believes that trisoids are different and distinguishable from circles and ellipses. To the extent the Primary Examiner cannot provide evidence to demonstrate that trisoids are an art-recognized equivalent to circles or ellipses, Appellant's trisoid shaped openings should not be considered "obvious" to one of skilled in the art based on the cited references.

5. Rejection of Claims 59, 61-67 and 69-95 Under 35 U.S.C. §103(a) Over Kramer In View Of Fulton, And Further In View Of The Allegedly Admitted Prior Art Of Appellant's Declaration filed 28 February 2008 Is Improper.

Appellant respectfully submits that Claims 59, 61-67 and 69-95 are not obvious over the combination of Kramer, Fulton and the allegedly admitted prior art of the BT-750 ¾" ceramic wagon wheel unit.

The Primary Examiner alleges that the BT-750 ¾" ceramic wagon wheel unit is admitted prior art as a result of statements made by Appellant during the prosecution history. However, Appellant respectfully submit that the unit is not actual "prior art" to Appellant's claimed subject matter. The BT-750 ¾" ceramic wagon wheel unit is manufactured by ACCCO, Inc. of Roseville, Ohio, and was first offered for sale by Catalyst Trading Company, Ltd, of Houston, Texas, in approximately 2002. This date is approximately four (4) years after Appellant's effective filing date for the present application of May 29, 1998.

In the Amendment and Response filed June 11, 2009, Appellant submitted a signed

Affidavit from John N. Glover, the listed inventor on the present application and President of Crystaphase International Inc., the Assignee for the present application. (Ex. M). The Affidavit is based upon Mr. Glover's first hand knowledge and sets forth additional information regarding the earliest date on which the BT-750 ¾" ceramic wagon wheel unit was first offered for sale by Catalyst Trading Company, Ltd., and indicates that this date was, without question, subsequent to Appellant's original filing date.

To Appellant's knowledge, the BT-750 ¾" ceramic wagon wheel unit was not known or used by others in this country prior to Appellant's original filing date, nor was there any other means by which the BT-750 ¾" ceramic wagon wheel unit would have become "prior art" to Appellant's claimed subject matter. Appellant can provide an additional Affidavit to this effect, to the extent it would be beneficial in overcoming any rejections of Appellant's claimed subject matter.

Further, Appellant respectfully submit that the entire record should be considered under the totality of the circumstances in determining the exact scope of any alleged admission by Appellant. *See Aktiebolaget Karlstads Mekaniska Werkstad v. U.S. Intern. Trade Com'n*, 705 F.2d 1565, 1574 (1983) ("it is necessary to consider everything that has been said about what is prior art.")(Ex. N); *Application of Nomiya*, 509 F.2d 566, 571 (C.C.P.A. 1975) ("It is necessary to consider everything Appellant have said about what is prior art to determine the exact scope of their admission.")(Ex. O).

Appellant' clarifying and corrective statements in the file history regarding the BT-750 ¾" ceramic wagon wheel unit should be given due weight when determining the weight any alleged admission will be given. The BT-750 ¾" ceramic wagon wheel unit is not actual "prior art" to Appellant's claimed subject matter.

Even if the BT-750 ¾" ceramic wagon wheel unit is considered "prior art" to be weighed along with Kramer and Fulton, the combination of these three references still does not show, teach or suggest all of Appellant's claim limitations.

Argument Summary

As to the obviousness rejections made under 35 U.S.C. § 103, neither the references alone, or in combination, show, teach or suggest each and every element of independent claims 59, 67, 78, 86-89 and 94 or the claims dependent therefrom. There is no suggestion or motivation to combine reference teachings, *assuming arguendo,* that the references even teach Appellant's claim limitations. At least one claimed element functions differently from the teachings of the cited prior art. Finally, the combination of prior art elements provides unpredictable results.

As to the written description rejection made under 35 U.S.C. §112, first paragraph, Appellant respectfully submits that the features in the subject claims 82-85 are described in the drawings, and are not new matter. Appellant's drawings describe what is claimed and convey to those skilled in the art that Appellant actually invented what is claimed. Further, the features in the subject claims 86-88 are described in the originally filed application.

Conclusion

For the foregoing reasons, it is submitted that the Primary Examiner's rejections of claims 59, 61-67 and 69-95 are erroneous, and reversal of the Primary Examiner's decision is respectfully requested.

A Request for Five (5) Month Extension of Time is submitted herewith. The Commissioner is authorized to charge any fees which may be required (or credit any

overpayment), to Greenberg Traurig Deposit Account No. 50-2638 (Order No. 105218.04).

Respectfully submitted,

Date: 09/09/10

Ben D. Tobor, Reg. No. 27,760
Mark G. Chretien, Reg. No. 63,858
GREENBERG TRAURIG LLP
1000 Louisiana Street, Suite 1700
Houston, Texas 77002
Phone: (713) 374-3568
Fax: (713) 754-7568
ATTORNEYS FOR ASSIGNEE
CRYSTAPHASE INTERNATIONAL, INC.

VIII. CLAIMS APPENDIX

A copy of the claims presented in this appeal is included below.

Claims 1-58. Cancelled

Claim 59. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body having a substantially annular outer peripheral shape, a central opening extending through the body, and at least three elliptical openings extending through the body and positioned between the central opening and an outer periphery of the body so that a combination of the central opening and the at least three elliptical openings define a plurality of fluid flow passageways extending through the at least some of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 60. Cancelled

Claim 61. (Previously Presented) A method as defined in claim 59, further including the steps of: removing contaminants from a contaminated organic-based feed stream; and

providing a decontaminated and uniformly spread organic-based feed stream to a catalyst bed for further processing in the chemical reactor.

Claim 62. (Previously Presented) A method as defined in claim 59, including the step of packing the ceramic filter units into the chemical reactor with a packing factor of about 200 to 500 ft^2/ft^3.

Claim 63. (Previously Presented) A method as defined in claim 59, including the step of packing the ceramic filter units in graduated layers into the chemical reactor with each layer having a different packing factor of about 200 to 500 ft^2/ft^3.

Claim 64. (Previously Presented) A method as defined in claim 59, wherein the body of at least one of the plurality of ceramic filter units has a fluted outer peripheral surface.

Claim 65. (Previously Presented) A method as defined in claim 59, wherein the outer peripheral includes a plurality of recessed notches extending inwardly from the outer periphery towards the medial portion of the ceramic filter unit.

Claim 66. (Previously Presented) A method as defined in claim 59, wherein the at least three elliptical openings substantially surround the central opening between the central opening and the outer periphery to thereby define a ring around the central opening.

Claim 67. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body having a substantially polygonal outer peripheral shape, a central opening extending through the body, and at least three elliptical openings extending through the body and positioned between the central opening and an outer periphery of the body so that a combination of the central opening and the at least three elliptical openings define a plurality

of fluid flow passageways extending through the at least some of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through at least some of the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 68. Cancelled

Claim 69. (Previously Presented) A method as defined in claim 67, further including the steps of: removing contaminants from a contaminated organic-based feed stream; and providing a decontaminated and uniformly spread organic-based feed stream to a catalyst bed for further processing in the chemical reactor.

Claim 70. (Previously Presented) A method as defined in claim 67, wherein the outer peripheral includes a plurality of notches recessed from the outer peripheral towards the medial portion of the ceramic filter unit.

Claim 71. (Previously Presented) A method as defined in claim 67, including a step of utilizing ceramic filter units wherein the outer periphery has a polygonal shape with a length of about 1/8 inches to about 3 inches.

Claim 72. (Previously Presented) A method as defined in claim 67, wherein the body of at least one of the plurality of ceramic filter units has a substantially polygonal shape selected from the group consisting of triangles, quadrilaterals, squares, rectangles, pentagons, hexagons, heptagons, and octagons.

Claim 73. (Previously Presented) A method as defined in claim 67, wherein the body of at least one of the plurality of ceramic filter units has a square shape with a width of about 1/4 inches to about 3 inches.

Claim 74. (Previously Presented) A method as defined in claim 67, wherein the body of at least one of the plurality of ceramic filter units has a rectangular shape with a length of about 1/4 inches to about 3 inches and a width of about 1/4 inches to about 3 inches.

Claim 75. (Previously Presented) A method as defined in claim 67, wherein the body of at least one of the plurality of ceramic filter units has a closed-planed shape with a width of about 1/4 inches to about 3 inches.

Claim 76. (Previously Presented) A method as defined in claim 67, wherein the outer peripheral includes a plurality of recessed notches extending inwardly from the outer periphery towards the medial portion of the ceramic filter unit.

Claim 77. (Previously Presented) A method as defined in claim 67, wherein the at least three elliptical openings substantially surround the central opening between the central opening and the outer periphery to thereby define a ring around the central opening.

Claim 78. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body, a central opening extending through the body, and at least three elliptical openings also extending through the body and positioned between the central opening and an outer periphery of the body so that a combination of the central opening and the at least three elliptical openings define a plurality of fluid flow passageways extending through each of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through the at least some of the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 79. (Previously Presented) A method as defined in Claim 59, wherein the central opening is circular and the elliptical openings are non-circular.

Claim 80. (Previously Presented) A method as defined in Claim 67, wherein the central opening is circular and the elliptical openings are non-circular.

Claim 81. (Previously Presented) A method as defined in Claim 78, wherein the central opening is circular and the elliptical openings are non-circular.

Claim 82. (Previously Presented) A method as defined in Claim 64, wherein the fluted outer peripheral surface of the at least one of the plurality of ceramic filter units has sharp corners.

Claim 83. (Previously Presented) A method as defined in Claim 65, wherein at least one of the recessed notches of the outer periphery has sharp corners.

Claim 84. (Previously Presented) A method as defined in Claim 67, wherein the outer periphery has sharp corners.

Claim 85. (Previously Presented) A method as defined in Claim 76, wherein at least one of the recessed notches on the outer periphery has sharp corners.

Claim 86. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body having a substantially annular outer peripheral shape, a central opening extending through the body, and at least three trisoid-shaped openings extending through the body and positioned between the central opening and an outer periphery of the body so that a combination of the central opening and the at least three trisoid-shaped openings define a plurality of fluid flow passageways extending through the at least some of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 87. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body having a substantially polygonal outer peripheral shape, a central opening extending through the body, and at least three trisoid-shaped openings extending through the body and positioned between the central opening and an outer periphery of the body so that a combination of the central opening and the at least three trisoid-shaped openings define a plurality of fluid flow passageways extending through the at least some of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing

the organic-based feed stream through at least some of the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 88. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body, a central opening extending through the body, and at least three trisoid-shaped openings also extending through the body and positioned between the central opening and an outer periphery of the body so that a combination of the central opening and the at least three trisoid-shaped openings define a plurality of fluid flow passageways extending through each of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through the at least some of the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 89. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body and at least three trisoid-shaped openings extending through the body and positioned between a medial portion of the unit and an outer periphery of the unit so that the at least three trisoid-shaped openings define a plurality of fluid flow passageways extending through each of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through the at least some of the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 90. (Previously Presented) The method of claim 89, wherein the body has a substantially annular outer peripheral shape.

Claim 91. (Previously Presented) The method of claim 90, wherein the body has a circular outer peripheral shape.

Claim 92. (Previously Presented) The method of claim 89, wherein the body includes five trisoid-shaped openings.

Claim 93. (Previously Presented) The method of claim 89, wherein the body includes six trisoid-shaped openings.

Claim 94. (Previously Presented) A method of fluid distribution in a chemical reactor comprising the steps of:

providing a layer of a plurality of ceramic filter units, at least some of the ceramic filter units including a body having a circular outer peripheral shape and at least three elliptical openings extending through the body and positioned between a medial portion of the unit and an outer periphery of the unit so that the at least three elliptical openings define a plurality of fluid flow passageways extending through the at least some of the plurality of ceramic filter units;

contacting an organic-based feed stream with the layer of the plurality of ceramic filter units; and

subdividing the organic-based feed stream into a plurality of smaller fluid streams by passing the organic-based feed stream through the plurality of fluid flow passageways prior to the organic-based feed stream contacting a catalyst bed in the chemical reactor.

Claim 95. (Previously Presented) The method of claim 94, wherein the body includes six elliptical openings.

IX. EVIDENCE APPENDIX

Exhibit A: Kramer (US 4,615,796)

Exhibit B: "CE Refresher: Catalyst Engineering, Part 2" by John Fulton

Exhibit C: Hung et al. (DE 3,539,195)

Exhibit D: Declaration submitted by inventor John N. Glover on February 28, 2008

Exhibit E: Final Office Action dated August 10, 2009

Exhibit F: Appellant's U.S. Application Publication No. 2001/0015336

Exhibit G: *Cooper Cameron v. Kvaerner Oilfield,* 291 F. 3d 1317, 1323 (Fed. Cir. 2002)

Exhibit H: Appellant's Office Action Response dated February 17, 2005

Exhibit I: Declaration submitted by inventor John N. Glover on November 5, 2003

Exhibit J: Office Action dated April 26, 2000

Exhibit K: Office Action dated December 8, 2006

Exhibit L: "Beyond the Ellipse" article defining the term "trisoid" by Ivars Peterson

Exhibit M: Declaration submitted by inventor John N. Glover on June 11, 2009

Exhibit N: *Aktiebolaget Karlstads Mekaniska Werkstad v. U.S. Intern. Trade Com'n*, 705 F.2d 1565, 1574 (1983)

Exhibit O: *Application of Nomiya*, 509 F.2d 566, 571 (C.C.P.A. 1975)

X. RELATED PROCEEDINGS APPENDIX

None